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10/600,349

06/23/2003

Tadao Shiotani

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12/13/2004

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
ALEXANDRIA, VA 22314

EXAMINER

LAWRENCE JR, FRANK M

ART UNIT

PAPER NUMBER

1724

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/600,349

Applicant(s)

SHIOTANI ET AL.

Examiner

Frank M. Lawrence

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10 is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on June 24, 2002. It is noted, however, that applicant has not filed a certified copy of the Japanese application as required by 35 U.S.C. 119(b).

### *Specification*

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally *limited to a single paragraph* on a separate sheet within the range of 50 to 150 words.

3. The disclosure is objected to because of the following informalities: There are many instances in the specification where a single letter is missing from a word, perhaps being the result of a printing or fax problem. See for example line 9 of page 2. Other occurrences are found on pages 2, 4, 7-9, 11, 15-20, and claims 2, 4, 7 and 10. More may have been missed during examination. Also, a section of text on page 7, lines 13-17, is illegible because of what appears to be highlighting.

Appropriate correction is required.

### *Drawings*

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 2', 7' (page 13). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the

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page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 2 is indefinite because it recites that the anaerobic tank, denitrification tank, and nitrification tank are disposed in the mentioned order however it is unclear whether this refers to the order in claim 1 or the mentioned order in claim 2.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulder (4,384,956).
9. Mulder '956 teaches a wastewater purification system having an anaerobic methane fermentation tank (12) followed by an anaerobic denitrification tank (15) then an aerobic

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nitrification tank (20), with a return line (16) from the nitrification tank outlet back to the denitrification tank (figure 2, col. 4, line 40 to col. 3, line 7).

10. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffland et al. (6,054,044).

11. Hoffland et al. '044 teach a wastewater treatment apparatus for biological treatment with bacteria, comprising an anoxic tank followed by an anaerobic tank then an aerobic tank, with a return line from the aerobic tank back to the anaerobic tank (figure 1, col. 7, line 1 to col. 8, line 29, claims 1-12). In another embodiment, the system can include an anoxic tank followed by an aerobic tank, a second anoxic tank, and a second aerobic tank (figure 7).

12. Claims 1, 2, 4, 5 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Tanaka et al. (6,007,712).

13. Tanaka et al. '712 teach a wastewater treatment apparatus, comprising an anaerobic filter apparatus (19), an anaerobic denitrification tank (11), and an aerobic nitrification tank (16) disposed in that order with a return line (21) from the nitrification tank back to the denitrification tank, wherein some of the tanks have bacteria immobilized on a PVA hydrogel support (figures, 3, 8, col. 7, line 14 to col. 9, line 13, col. 15, lines 22-59).

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffland et al. '044 in view of Tanaka et al. '712.

16. Hoffland et al. '044 disclose all of the limitations of the claim as discussed in paragraph 11 above except that the bacteria have been immobilized on a support. Tanaka et al. '712 disclose a system as described in paragraph 13 above. It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the tanks of Hoffland et al. '044 by using the support structures of Tanaka et al. '712 in order to provide a more compact apparatus with an increase of water content, an excellence of a permeability with respect to oxygen, and an increase in affinity with an organism ('712, col. 2, lines 43-52).

***Allowable Subject Matter***

17. Claim 10 is allowed.

18. The following is an examiner's statement of reasons for allowance: The prior art of record fails to disclose or suggest a method for treating wastewater containing a nitrogen-containing dye, comprising a step for contacting the water with sulfate reducing bacteria under anaerobic conditions, a nitrification step for contacting the water with nitrifying bacteria under aerobic conditions, and a denitrification step for contacting the water into contact with denitrifying bacteria under anaerobic conditions. The allowability of claim 10 is under the assumption that the steps of contacting with the specified bacteria are positively recited method steps. The closest prior art to the Krull reference discloses reducing azo-dyes using aerobic and anaerobic steps but does not suggest a motivation for using the specified types of bacteria.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional references listed on the attached PTO-892 form disclose biological wastewater treatment systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank M. Lawrence whose telephone number is 571-272-1161. The examiner can normally be reached on Mon-Thurs 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank M. Lawrence  
Primary Examiner  
Art Unit 1724

*Frank Lawrence*  
10-20-04

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